Figure 1

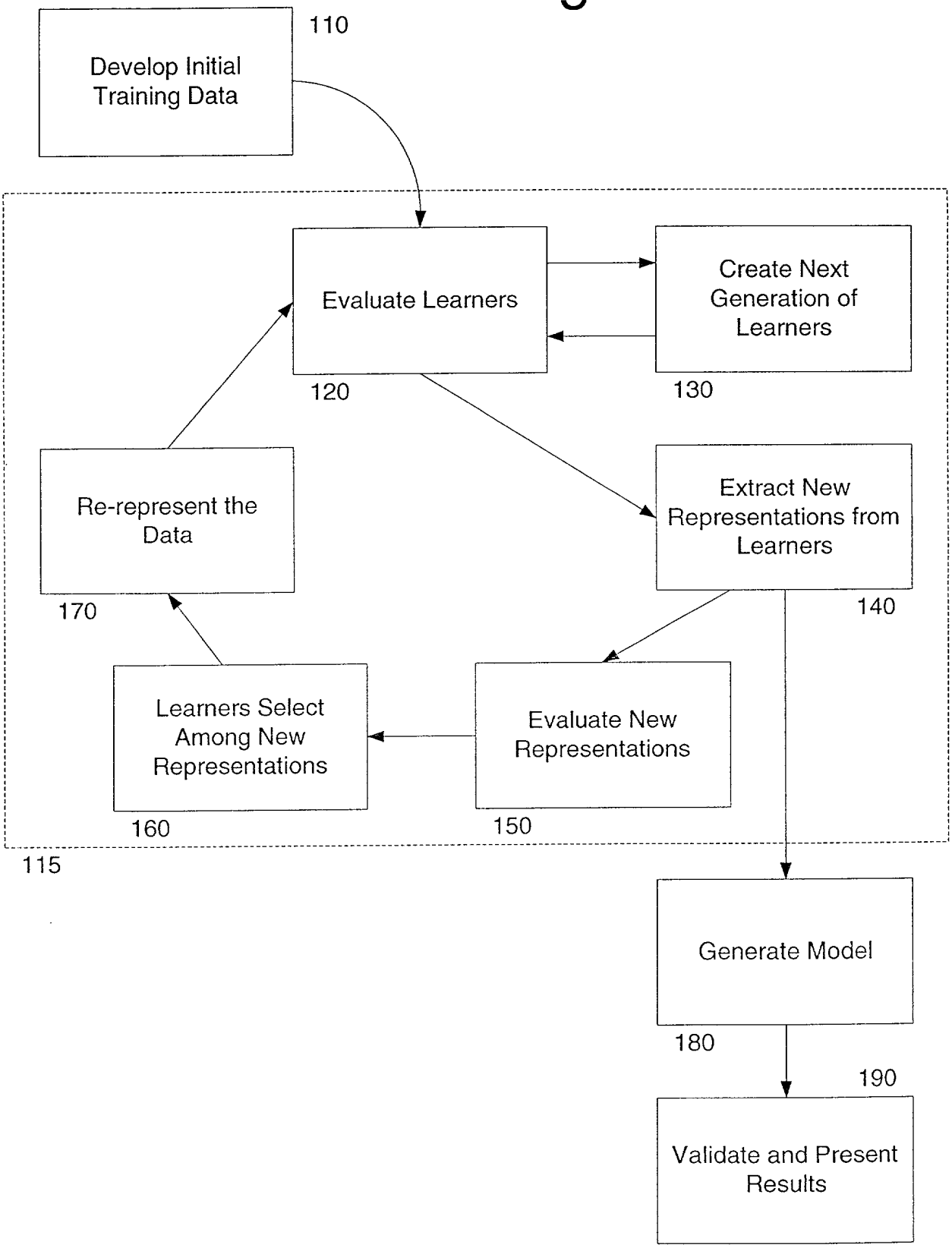

Develop Initial Training Data
110
Evaluate Learners
120
Create Next Generation of Learners
130
Re-represent the Data
170
Extract New Representations from Learners
140
Learners Select Among New Representations
160
Evaluate New Representations
150
115
Generate Model
180
190
Validate and Present Results

Figure 2

FEATURE	VALUE	
AGE	___	220
AGEX	___	221
AMTPAIDYR1	___	222
AMTPAIDYR2	___	223
ANTENSCREEN	___	224
ANTENSCREENB	___	225
ANTEPARTUM	___	226
ANTEPARTUMB	___	227
BIRTHTYPE	___	228
BLACK	___	229
CCOMPLEX	___	230
COST20MN	___	231
COST20N	___	232
CPT5900	___	233
CPT5900B	___	234
CPT5942X	___	235
CPT5942XB	___	236
DELIVERYTYPE	___	237
FERDRUG	___	238
HISPANIC	___	239
HRPVISITS	___	240
HRPVISITSX	___	241
HRPVISITSB	___	242
INCOME	___	243
MCOMP	___	244
MCOMPLEX	___	245
MCOMPLEX1	___	246
MCOMPLEX2	___	247
MCOMPUNI	___	249
NPVISITSX	___	250
NPVISITSXB	___	251
PMANAGE	___	252
PMANAGEB	___	253
WHITE	___	254
ZIP	___	255
ZIPX	___	256

210

09669502 - 061501

Figure 3

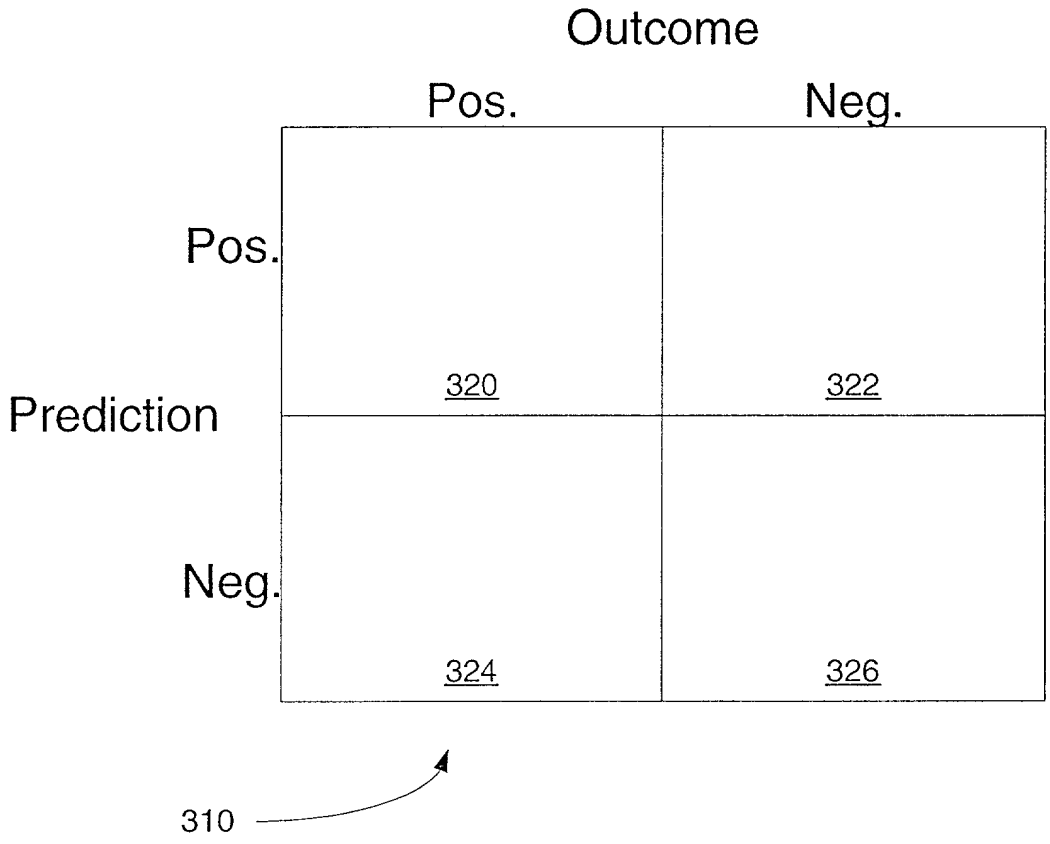


Figure 4

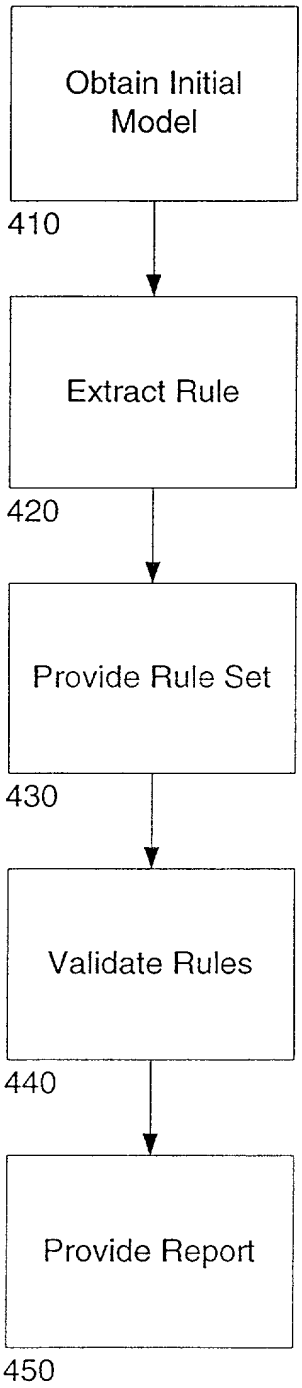

Obtain Initial Model
410
Extract Rule
420
Provide Rule Set
430
Validate Rules
440
Provide Report
450

Figure 5

510

Simulation 20

515a Rule 1:
520a FEATURE-256601 > –0.257896
525a → class T **530a** [72.5%]

515b Rule 2:
520b FEATURE-256601 ≤ –0.257896
525b → class NIL **530b** [89.2%]

Default class: NIL

540 FEATURE-256601:

```
(+ –7/5 (* –17 (/ % MCOMP 24))
(* –31/100 (– FERDRUG MCOMPUNI))
(* –9/500 (– (TAN NPVISX) (* AGEX MCOMP)))
(* 1/156250 ANTENSCR) (* 1/156250 ZIP)
(* 11/500000 (+ AGEX ANTEPART) (TAN INCOME))
(* 59/10000 AGEX) (* 59/10000 ANTEPART)
(* 49/5000 (SQR (– MCOMP FERDRUG)))
(* 1/100 (TAN NPVISX)))
```

5,058,180 Oct. 15, 1991

Figure 6

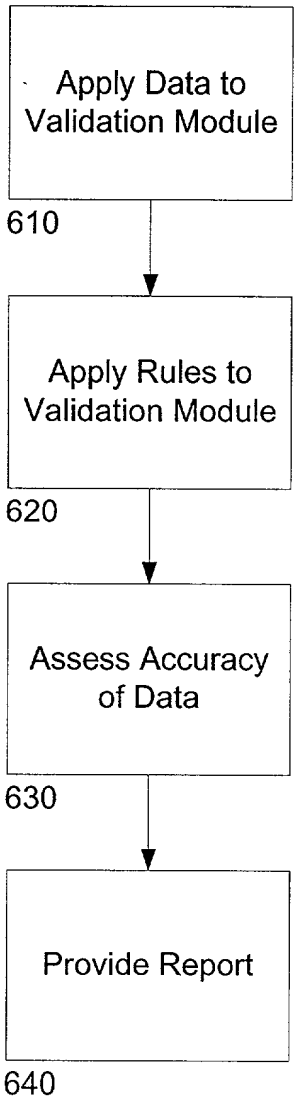

Apply Data to Validation Module
610
Apply Rules to Validation Module
620
Assess Accuracy of Data
630
Provide Report
640

Figure 7

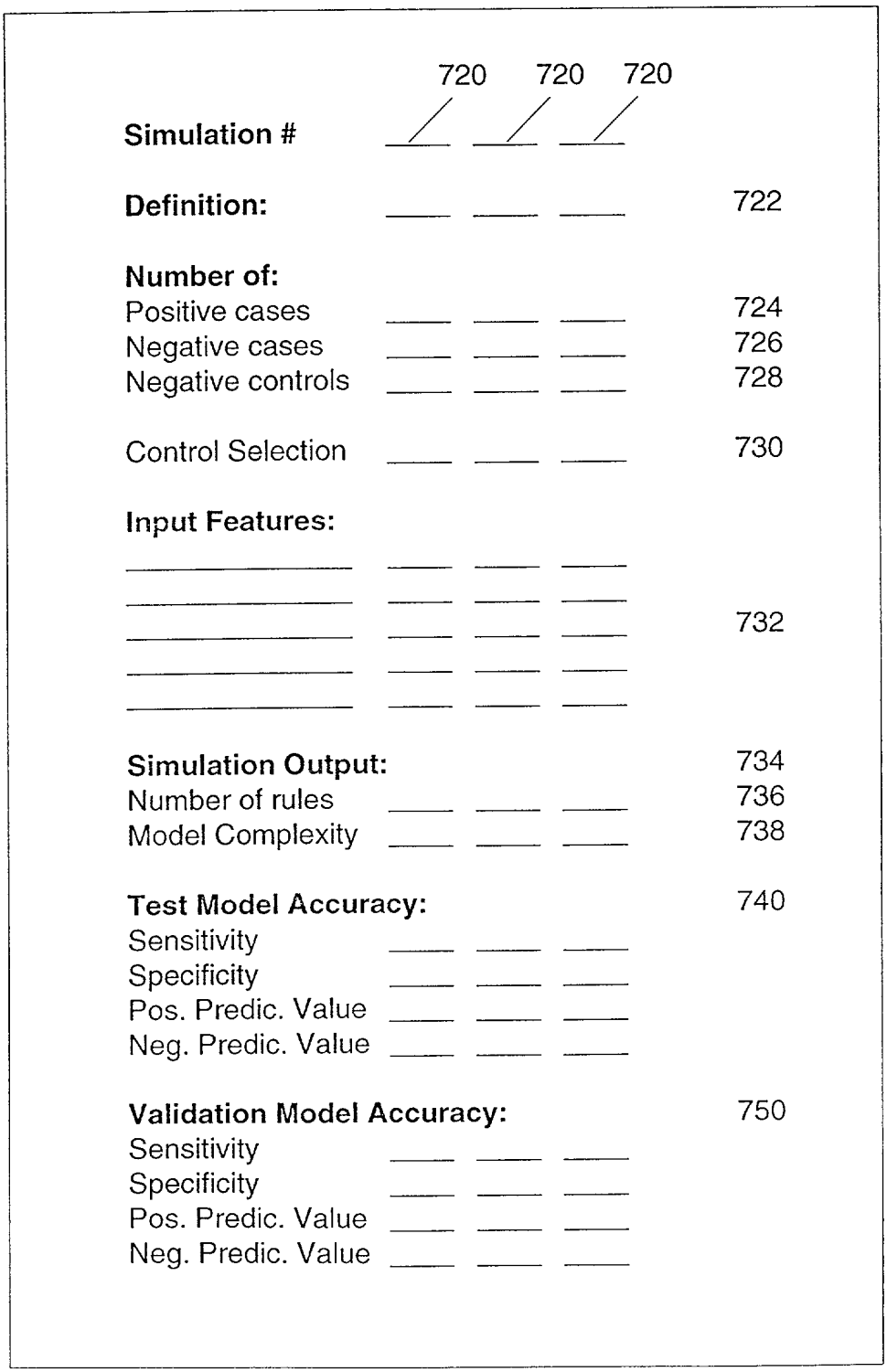

720
720
720
Simulation #
Definition:
722
Number of:
Positive cases
724
Negative cases
726
Negative controls
728
Control Selection
730
Input Features:
732
Simulation Output:
734
Number of rules
736
Model Complexity
738
Test Model Accuracy:
740
Sensitivity
Specificity
Pos. Predic. Value
Neg. Predic. Value
Validation Model Accuracy:
750
Sensitivity
Specificity
Pos. Predic. Value
Neg. Predic. Value
710

Figure 8

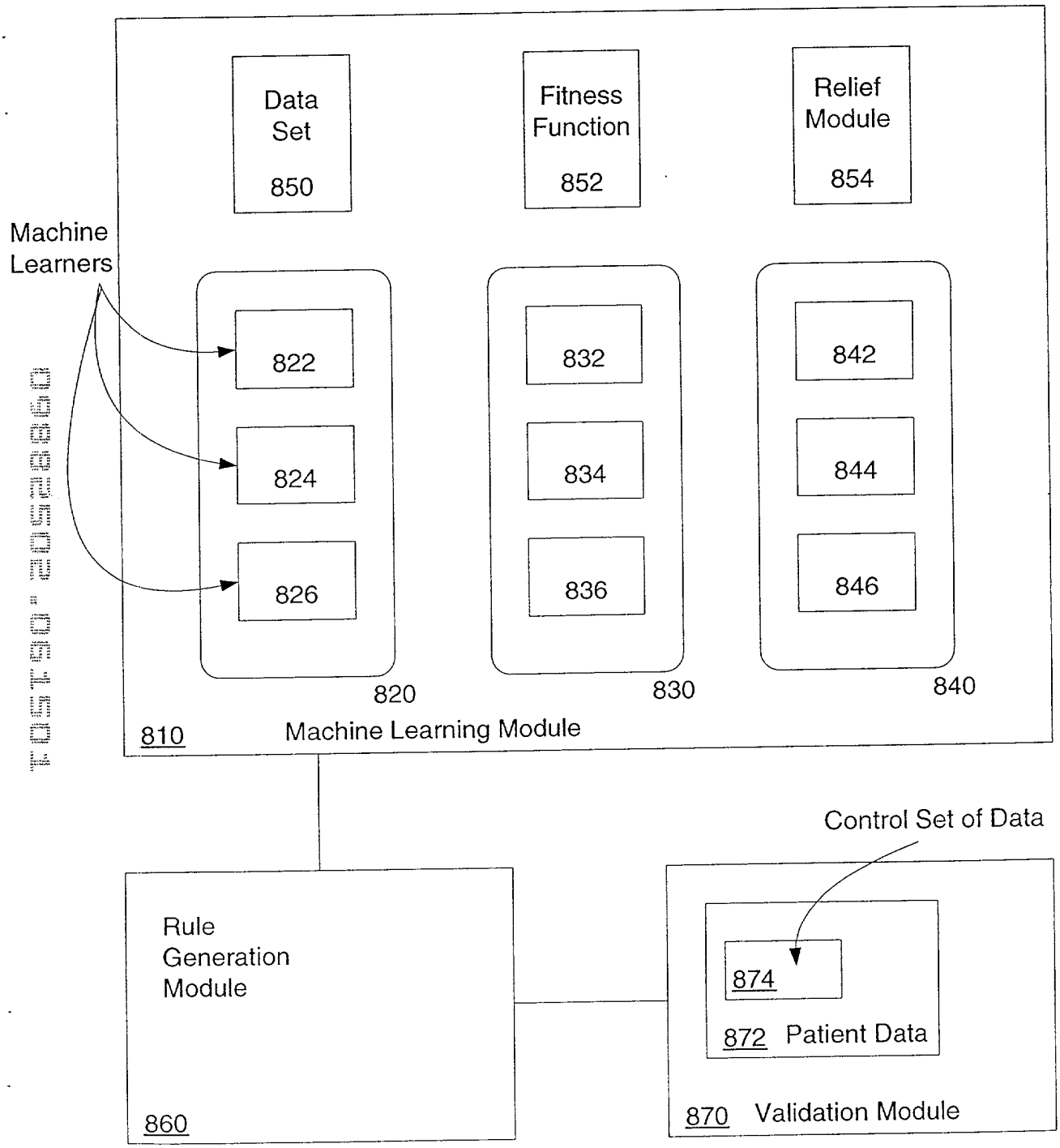
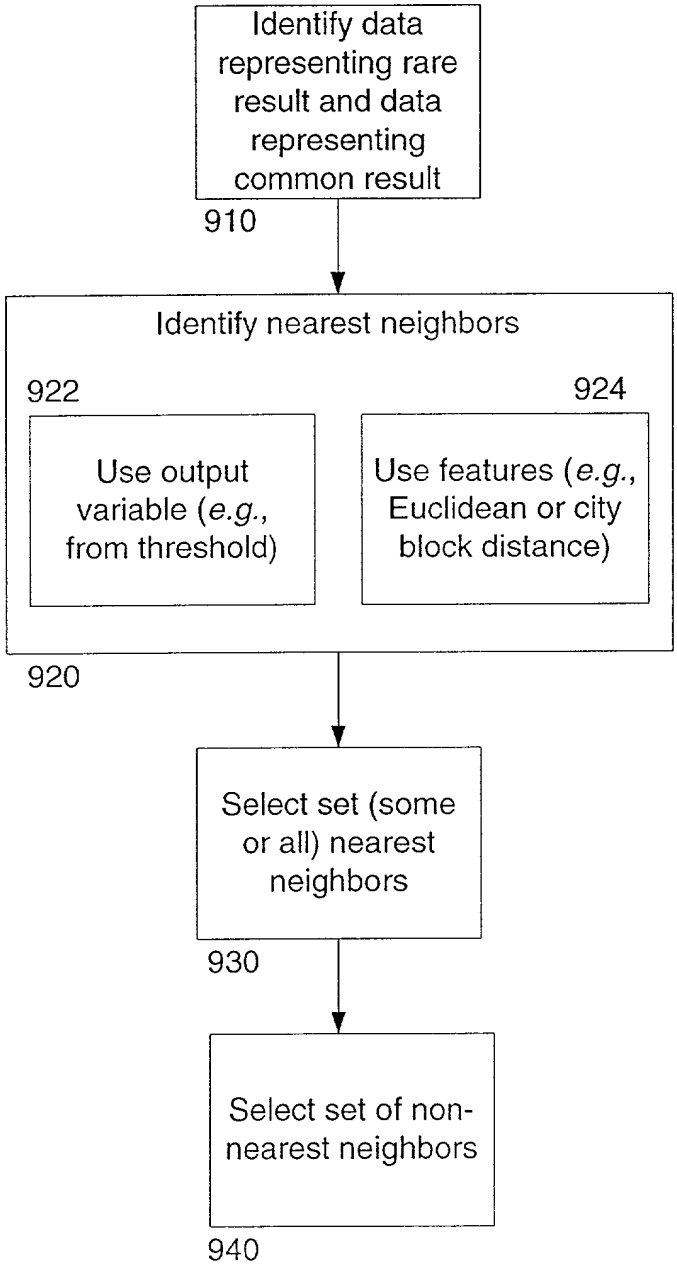

Data Set
850
Fitness Function
852
Relief Module
854
Machine Learners
822
824
826
832
834
836
842
844
846
820
830
840
810
Machine Learning Module
Control Set of Data
Rule Generation Module
860
874
872 Patient Data
870 Validation Module

Figure 9


Identify data representing rare result and data representing common result
910
Identify nearest neighbors
922
Use output variable (e.g., from threshold)
924
Use features (e.g., Euclidean or city block distance)
920
Select set (some or all) nearest neighbors
930
Select set of non-nearest neighbors
940